Chemistry Paper 1		
No.	**Question**	**Answer**
1	What is an ion?	An atom which has lost or gained an electron(s)
2	Name the three subatomic particles, their mass and relative charge	Protons (1, +1), neutrons (1, 0), electrons (0, -1)
3	What is the mass number of an atom?	The number of protons and the number of neutrons added together in an atom
4	What is the maximum number of electrons can go in the second and third shells?	8
5	What is the plum pudding model of the atom?	Sphere (ball) of positive charge with negative electrons embedded in it
6	What did James Chadwick discover?	Uncharged particle called the neutron
7	What are Group 7 on the periodic table called?	The Halogens
8	What are Group 1 on the periodic table called?	The Alkali metals
9	Explain why the noble gases are inert (unreactive)	They have full outer shells, so do not need to gain or lose electrons
10	What are isotopes?	Atoms of the same element (same number of protons) with different number of neutrons.
11	How is the modern Periodic table ordered?	By Atomic Number
12	How does the reactivity of the alkali metals change as you go down the group?	Increases
13	What is a displacement reaction?	When a more reactive metal takes the place of a less reactive metal in a compound
14	How are covalent bonds formed?	Overlap of outer shell and sharing electrons
15	What are intermolecular forces?	The forces between molecules.
16	Why would an ion have a positive charge?	It has lost electrons
17	Why would an ion have a negative charge?	It has gained electrons
18	Explain in terms of electrons what occurs when lithium bonds with chlorine	One electron transferred from lithium to chlorine so both have a full outer shell and are stable like group 0 Producing a sodium ion and a chloride ion
19	Name the force that holds oppositely charged ions together.	Electrostatic force of attraction

20	Why do ionic substances conduct electricity when molten or dissolved?	Ions are free to move and carry a charge
21	Describe the structure of simple covalent molecules	Strong covalent bonds between atoms, weak forces holding the molecules together
22	Describe the main features of metals in terms of their structure	Positive metal ions arranged in ordered rows/columns, layers with delocalised electrons
23	Explain why pure metals are soft	Layers of metal ions are free to slide over each other
24	Explain why graphite conducts electricity	Delocalised electrons which are free to move
25	What is a fullerene?	Substance made of carbon atoms arranged in a cage
26	What is conservation of mass?	In a chemical reaction, atoms are not created or destroyed, just rearranged, so total mass before = total mass after the reaction.
27	What is relative formula mass? (Mr)	The sum of the relative atomic masses (Ar) of each atom in a substance
28	How can you convert a volume reading in cm^3 to dm^3?	Divide by 1000
29	What is an exothermic reaction?	A reaction where energy is transferred to the surroundings. (Temperature increases)
30	Give two examples of endothermic reactions.	Thermal decomposition reactions, citric acid and sodium hydrogencarbonate.
31	Is breaking bonds endothermic or exothermic?	Endothermic. Chemical bonds are strong so require energy to break (like when you have to put energy in to separate magnets from each other)
32	Which ions are in *NaCl*	(Sodium*) Na+* and chloride (*Cl-*)
33	In terms of electrons, what makes some metals more reactive than others?	They lose their outer electrons more easily
34	What is an ore?	Rock containing enough of a metal compound to be economically worth extracting
35	In terms of pH (number) what is an acid?	A solution with a pH of less than 7
36	In terms of pH (number) what is a neutral solution?	A solution with a pH of 7
37	What are the products of a reaction between a metal and an acid?	Salt + hydrogen
38	At which electrode would $Zn^{2+}_{(aq)}$ turn into $Zn_{(s)}$?	Cathode (negative) (needs to gain electrons)
39	What will be the products for the electrolysis of molten zinc oxide?	Zinc and oxygen

40	Why is sodium not produced in the electrolysis of sodium chloride solution?	It is more reactive than hydrogen so hydrogen is produced instead.
41	What is an electrolyte?	A solution containing ions which allows current to flow.
42	Where are metals formed?	At the cathode (negative electrode)
43	In the electrolysis of aluminium oxide, what are the anodes made of?	Graphite (carbon)
44	What is the name of the positive electrode?	Anode
45	In the electrolysis of aluminium oxide, why is the aluminium oxide mixed with cryolite	To lower the melting point
46	In the electrolysis of a metal halide solution, what is produced at the anode?	Halogen gas
47	In terms of reactivity what metals are extracted from ionic compounds by using electrolysis?	Metals that are more reactive than carbon.
48	What is an exothermic energy transfer?	Energy transfer to the surroundings.
49	What is a reaction profile?	Diagram showing how energy changes in a reaction.
50	What is the activation energy?	The minimum amount of energy a particle needs before it will be able to react when it collides with another particle
Chemistry Paper 2		
1	What is the rate of reaction?	How quickly reactants are used up or products are produced.
2	Explain why increasing the concentration increases the rate of reaction	More concentrated means more particles in solution, therefore more frequent collisions between reactants.
3	State the effect on increasing the pressure of a gas on the rate of reaction	Increases
4	What is a catalyst?	A substance that increases the rate of reaction but is not used up in the reaction.
5	How do catalysts increase the rate of a reaction?	Lowers the activation energy of the reaction, so more collisions result in a reaction.
6	What is a reversible reaction?	When the reactants turn into products and the products turn into reactants
7	What chemical symbol represents a reversible reaction?	⇌
8	What is dynamic equilibrium?	The point in a reversible reaction when the forward and reverse reactions are occurring at the same rate
9	What is a precipitate?	An insoluble solid in a solution
10	What is crude oil?	A mixture of hydrocarbons

11	Name five fuels we obtain from crude oil	Petrol, diesel oil, kerosene, heavy fuel oil and liquefied petroleum gas.
12	What is a hydrocarbon?	A compound made of atoms of hydrogen and carbon only
13	What is an alkane?	A hydrocarbon with only single carbon to carbon bonds
14	How does boiling point change with the length of an alkane?	The longer the alkane, the higher its boiling point
15	How does viscosity depend on chain length?	Longer the chain, higher the viscosity
16	What is cracking?	Breaking down a hydrocarbon with a long chain into smaller molecules
17	Name two methods to carry out cracking?	Steam cracking and catalytic cracking
18	What are the products of cracking?	Short chain alkanes and alkenes
19	What are akenes?	Hydrocarbons with at least one double carbon to carbon bond
20	Name the first four alkenes?	Ethene, propene, butene, pentene
21	How do you test for an alkene?	React it with bromine water goes orange to colourless
22	In terms of hydrocarbons what is a fraction?	A group of hydrocarbons with similar chain length
23	In chemistry what is a "pure" substance?	A substance made of a single element or compound
24	How can pure substances be distinguished from impure ones?	By their melting/boiling points
25	What is a formulation?	A mixture designed for a specific purpose.
26	What are some examples of a formulation?	Fuels, cleaning products, paints, medicines, alloys, fertilisers and foods.
27	What is chromatography?	A process of separating coloured mixtures, which can help to identify substances.
28	How can oxygen be tested for?	Relights a glowing splint
29	What is the test for Hydrogen?	A lit splint gives a squeaky pop
30	What is the test for carbon dioxide?	Turns limewater milky if bubbled through it.
31	What is the test for Chlorine?	Bleaches damp litmus paper white

32	How many spots will a pure compound produce on a chromatogram?	One
33	What is the atmosphere?	A layer of gas surrounding the Earth
34	What was the early atmosphere composed off?	Mainly carbon dioxide (CO_2)
35	How did the oceans form?	Water vapour condensing as the Earth cooled.
36	Why did the amount of carbon dioxide in the early atmosphere decrease?	1. Photosynthesis from algae and plants 2. Dissolved in the oceans, 3. Locked up in rocks and fossil fuels.
37	Why did the amount of oxygen increase?	Photosynthesis occurring in plants and algae.
38	Why are greenhouse gases needed?	To maintain temperatures on Earth to support life.
39	Name the three greenhouse gases?	Water vapour ($H_2O_{(g)}$), carbon dioxide (CO_2) and methane (CH_4)
40	What type of radiation reaches Earth from the Sun?	Short wave- ultraviolet
41	What type of radiation leaves Earth?	Long wave- infrared
42	Name two human activities that increase the amount of carbon dioxide?	Use of fossil fuels, deforestation, transport, industry and factories
43	Name two human activities that increase the amount of methane?	Agriculture and landfill.
44	What is climate change?	The increase of the temperature of Earth.
45	What is peer review?	Experts looking over a scientist's findings to check that the results are reliable.
46	What is an example of a resource that is recycled?	Metals such as scrap steel.
47	What is an example of a resource that is reused?	Glass bottles
48	What is potable water?	Water that is safe to drink as it has low levels of soluble salts and microorganisms.
49	What are sources of fresh water?	Ground water, lakes and rivers.
50	What stages are looked at during an LCA?	Extracting and processing raw materials, manufacturing and packaging, use during its lifetime, disposal at the end of its useful life, transport at each stage.